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LOW PRESSURE RESEARCH
College Avenue Pool
Institute of Engineering Research
University of California
Berkeley 4, California
January 13, 1953

D I R E C T O R
Office of Naval Research
1000 Geary Street
San Francisco 9, California

MONTHLY STATUS REPORT - DECEMBER 1952

Contract N7-onr-295-Task 3
Project Number - NR 061-003

Dear Sir:

Progress on the contract for the month of December has been as follows:

1. Polar traverses of a molecular beam reflected from a glass plate have been completed for the reflected quadrant. Examination of the signal diffusely scattered in the incident quadrant is now under way and will complete this phase of the work on this surface. A polished steel surface and a companion etched steel surface have been prepared for the next phase of this program. Examination of a cleaved single crystal surface, and another engineering material, is also scheduled.

2. During the month of December the No. 3 Wind Tunnel was used to complete the test program evaluating the R.F. excited air glow flow visualization technique. Photographs of the shock wave from a wedge interacting with the boundary layer on a flat plate have been gathered for a variety of tunnel test conditions. The remainder of the December tunnel schedule was devoted to a preliminary examination of the problems associated with creating a normal shock wave by means of a suitably designed cylindrical barrel located in the air stream. This latter work is being carried out under a contract with the National Advisory Committee for Aeronautics.

3. The cone-drag single component balance has been reassembled following minor revisions in the design and is now being bench tested prior to use in the No. 3 Wind Tunnel.

4. During the month of December, a separate test program to measure base pressures on cone-cylinder models was carried out in the $3^{\text{in}} \times 3^{\text{in}}$ supersonic wind tunnel at the University of California at Los Angeles. These data will be extended by further tests in February and will be combined with data previously obtained at Berkeley to present a more complete picture of base pressure phenomena.

5. The following reports are in various phases of preparation:

a) A report describing the design and operational tests of a rotating cylinder apparatus for use in low density gas dynamics research is being written

b) A report describing the results of a subsonic heat transfer program using spherical models is being modified to include recent theoretical analysis of the effect of slip flow conditions to the measurement of heat transfer on spheres.

c) A report describing a theoretical analysis of the aerodynamic forces on a cylinder for the free molecule flow of a non-uniform gas is being prepared.

d) Reprints of the paper, "Vacuum Facilities for the Study of Supersonic Flow", by G. J. Maslach, have been ordered to be issued as a Project report. This paper was presented at the May meeting of the American Institute of Chemical Engineers.

6. Visitors: the following persons visited the Project during December:

T L K Smull	-	N.A.C.A., Washington, D. C.
Glen Goodwin	-	N.A.C.A., Ames Lab., Moffett Field, Calif.
I. Estermann	-	O.N.R., Washington, D. C.
Itiro Tani	-	University of Tokyo, Japan
B. M. Shepard	-	N.O.L., White Oak, Maryland
Capt. H. Coulter, U.S.N.	-	O.N.R., San Francisco, California
G. F. N. Mulders	-	O.N.R., San Francisco, California
I. Marton	-	National Bureau of Standards, Wash., D. C.
T. C. Lin	-	University of Washington, Seattle, Wash.

Very truly yours,

S. A. Schaaf

S. A. Schaaf
Faculty Investigator

SAS:ds:ll

cc: 1 ONR San Francisco
3 ONR Washington D.C.
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